## While you wait for the webinar to begin…

**According to the International Building Code, which of the following locations require panic hardware?**

| University lecture hall with 60 seats | Exterior doors of a 2,000-student high school | Factory outlet store in a fireworks factory |
| --- | --- | --- |



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| University lecture hall with 60 seats | Exterior doors of a 2,000-student high school | Factory outlet store in a fireworks factory |
| --- | --- | --- |

**ALL 3 REQUIRE PANIC HARDWARE**



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**Welcome to the AIA Continuing Education Webinar on Panic Hardware – When, Where, and Why?**

**We will begin in just a few minutes.**

Call in: 1-866-430-4132

Conference Code: 3178103300

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J247

**Panic Hardware – When, Where, and Why?**

Course Number: CDW20006

**Slide 1:**

Class Name: Panic Hardware –
When, Where, and Why?
Program: CDW20006
Provider Number: J247
Learning Units: 1
Provider Name: Allegion

Course Description
When panic hardware is required by code, there are additional mandates that must be followed regarding the operation of the hardware. Fire doors add yet another layer of requirements for this hardware, and there are also exceptions that apply in some locations. This webinar will explain when and where panic hardware is required, why it is used, and what other code requirements and exceptions need to be considered when selecting these devices.

DHi Education Partner

2 DHI CE Points per 1-hour webinar

ICC INTERNATIONAL CODE COUNCIL® MEMBER

.1 ICC CEU per 1-hour Webinar - Course #23559

**Slide 2:**

OBJECTIVES
Upon successful completion of this course participants will be able to:
• Understand the purpose of panic hardware in facilitating emergency egress by referencing historical events.
• Become familiar with the locations where panic hardware is required by the model codes and standards, based on occupancy type and calculated occupant load.
• Learn about the code requirements that apply to panic hardware, including requirements for fire doors, touchpad length, operable force, and required listings.
• Know the code requirements for electrified panic hardware options, including delayed egress, controlled egress, and panic hardware used in conjunction with electromagnetic locks.

**Slide 3:**

Call in: 1-866-430-4132
Conference Code: 3178103300

Cheri.Flanagan@allegion.com

**Slide 4:**
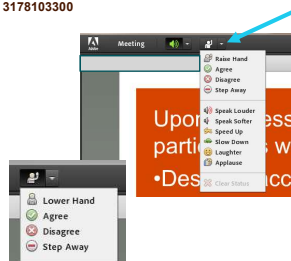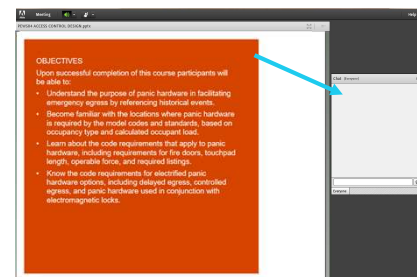
Cheri.Flanagan@allegion.com

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**Slide 5:**

**Lori Greene, DAHC/CDC, CCPR, FDAI**
• Manager, Codes & Resources for Allegion
• Responsible for support and education on building codes, fire codes, accessibility
• Development of NFPA, ICC, and BHMA codes and standards
• 25 years with the Allegion brands
• 33 years in the door and hardware industry
• iDigHardware.com

**Slide 6:**

**Panic Hardware –
When, Where, and Why?**
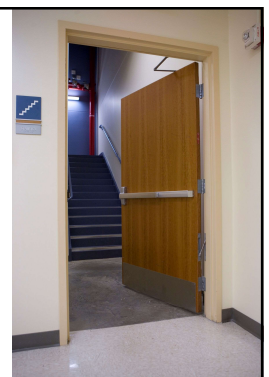
## Iroquois Theatre Fire

- How It All Began…

- 1903: Iroquois Theatre Fire – more than 600 fatalities

- Carl Prinzler
- Henry H. Dupont
- Vonnegut Hardware Company

- 1908: Von Duprin Safe Exit Device
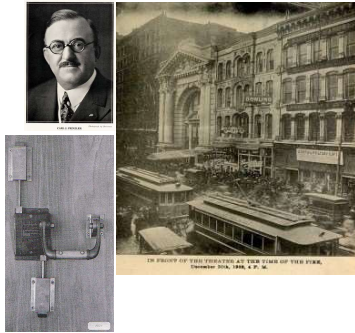
## What is panic hardware?

- **International Building Code (IBC):**

- *PANIC HARDWARE. A door-latching assembly incorporating a device that releases the latch upon the application of a force in the direction of egress travel. See "Fire exit hardware."*

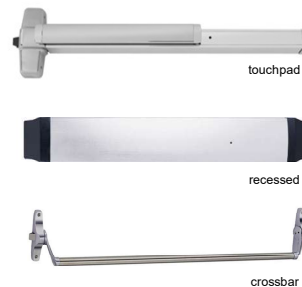- *FIRE EXIT HARDWARE. Panic hardware that is listed for use on fire door assemblies.*

**UL 305**
**A156.3**
**UL 10C**
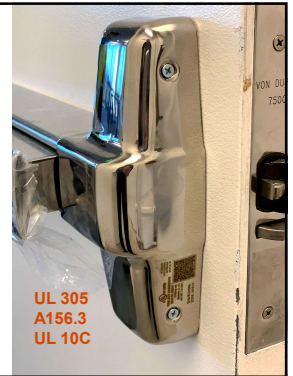
## Benefits

- Durability
- Security
- Low Maintenance
- Ease of Operation
- Electrified Options for Access Control

## Types of Panic Hardware

touchpad

recessed

**THIS IS NOT PANIC HARDWARE**

crossbar

PUSH

**POLL**
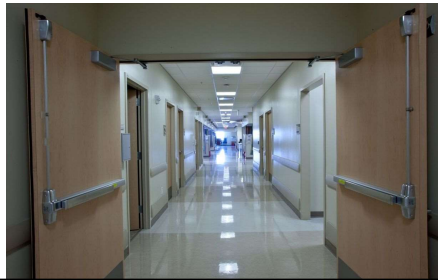
According to the IBC, panic hardware is required in which of the following locations?
A. Stair discharge door serving a 50-story office building
B. Main entrance/exit of an apartment building with 120 apartments
C. **Exterior door of a high school band room with 50 occupants**
D. All of the above

## Where is panic hardware required by code?

- The answer depends on:
  - Which code has been adopted
  - Occupancy type or use group
  - Calculated occupant load

Know your codes: **Panic hardware**

Panic hardware is essential to fast and easy egress during an emergency. That said, it's common to see these devices installed on openings where panic hardware isn't required by code. So, when is panic hardware actually required? While there's no simple answer to this seemingly simple question, this illustration helps clarify the basics.

A recording of the webinar "Panic Hardware— When, Where and Why?" is available on demand.

WATCH NOW

The requirements below apply to doors which lock or latch. They do not apply if a door has push/pull hardware and no lock or latch.
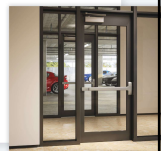
International Building Code (IBC) and International Fire Code (IFC)

From 2006 to present, all editions require panic hardware for doors serving these use groups:
- Assembly occupancies with an occupant load of 50 people or more
- Educational occupancies with an occupant load of 50 people or more
- High Hazard occupancies with any occupant load
- Some electrical rooms¹

NFPA 101 — Life Safety Code

All recent editions require panic hardware for doors serving these occupancy classifications.

Looking for more information?

Intro to Door Hardware: Where is Panic Hardware Required by Code? This video describes where panic door hardware is required by code.
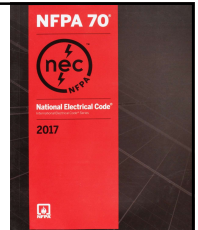
## Where is panic hardware required by code?

- **International Building Code (IBC) and International Fire Code (IFC)**
  - Use Group A – Assembly with an occupant load of 50 people or more
  - Use Group E – Educational with an occupant load of 50 people or more
  - Use Group H – High Hazard with any occupant load

- **NFPA 101 – Life Safety Code**
  - Assembly Occupancy with an occupant load of 100 people or more
  - Educational Occupancy with an occupant load of 100 people or more
  - Day Care Occupancy with an occupant load of 100 people or more
  - High Hazard Contents Areas with an occupant load of more than 5 people

Applies to doors in the egress path that lock or latch
(not to doors with push/pull hardware).

## NFPA 70
## National Electrical Code – 2017 Edition



- Rooms housing equipment of 1000 volts, nominal, or less, with equipment rated 800 amps or more that contains overcurrent devices, switching devices, or control devices
- Rooms housing equipment of more than 1000 volts, nominal
- Transformer Vaults
- Battery Rooms
- Energy Storage Systems
- Doors which lock or latch and are within 25 feet of the required working space must have listed panic hardware.

## Is panic hardware required on one leaf of a pair, or both?

- IBC/IFC – panic hardware required on "doors serving" the applicable areas (including "extra" leaves that are not required)
- NFPA 101 – where both leaves are "required", panic hardware is required on both leaves
- NFPA 70 (electrical rooms) – does not state 1 leaf or 2

AHJ MIGHT ALLOW PER NFPA 101

MULLION NOT RECOMMENDED FOR UNEQUAL LEAF PAIRS

Photo: Paul Goldense

Photo: Rachel Smith

## Can panic hardware be installed on doors that do not lead to an exit?

- Hospital operating rooms are a common location.
- The model codes do not prohibit this, although an AHJ might not allow it or may require signage.

NOT AN EXIT
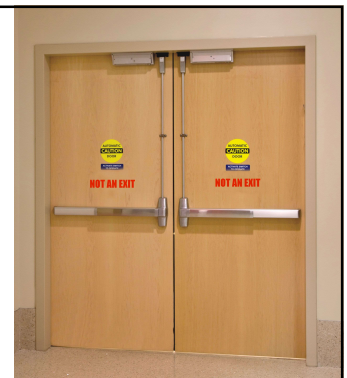
## Can fire exit hardware be installed on non-fire-rated doors?

- This is not prohibited by the model codes.
- NFPA 101 Annex A:
  - *A.7.2.1.7.2 The presence of fire exit hardware on a door does not imply the door is required to be a fire protection–rated door.*
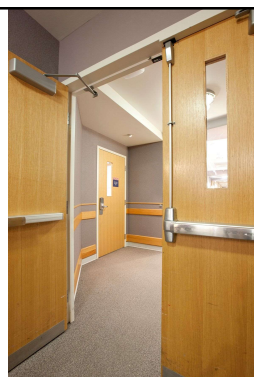
## Must be obvious/visible

- The US model codes do not specify a required amount of contrast.
- Panic hardware must not be purposely disguised.

NOT APPROVED

Photo: Zeke Wolfskehl

APPROVED BY THE AHJ
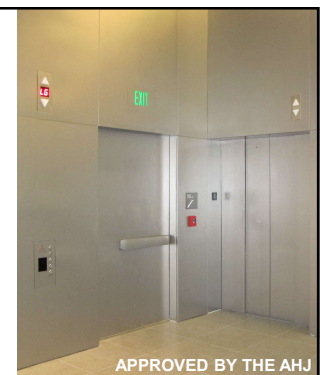
## No Other Lock/Latch/Device



## NFPA 101 - TIA 1436

- The intent is **NOT** to allow a second releasing operation for classroom doors with panic hardware.
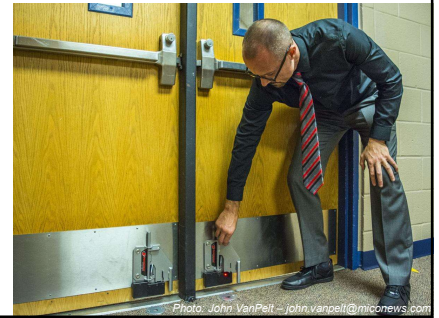- Doors with panic hardware must unlatch with one operation.



*Photo: John VanPelt – john.vanpelt@miconews.com*

## Dogging

- The dogging mechanism allows the latch to be held in a retracted position.



**Hex Key
Key Cylinder
Electric Latch Retraction**



Which of the following types of dogging mechanisms is allowed on fire exit hardware?
A. Hex Key
B. Key Cylinder
**C. Electric Latch Retraction**
D. No dogging is allowed on fire exit hardware

## Dogging

- No mechanical dogging allowed on fire exit hardware



Latch may be held back using electric latch retraction and must release on fire alarm.



**Electric Latch Retraction**

Apply Power – Latch Retracts

Remove Power – Latch Projects

Fire alarm can initiate latching.

## Less Bottom Rod / Less Bottom Latch (Cable)

- Auxiliary fire pin projects into the other leaf or into the floor at +/- 450 degrees
- Field prep for pin is acceptable if allowed by manufacturers' listings
- Egress not required during/after fire



## Fire Test

- IBC:
  - *1010.1.9.3 Locks and latches. Locks and latches shall be permitted to prevent operation of doors where any of the following exist:*
  - *5. Fire doors after the minimum elevated temperature has disabled the unlatching mechanism in accordance with listed fire door test procedures.*
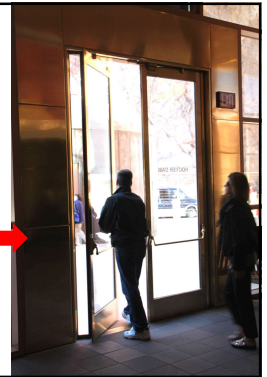


## Actuating Portion >/= 1/2 Door Width

- Where panic hardware is required, actuating portion of device (touch-pad or cross-bar) must be at least half the width of the door.
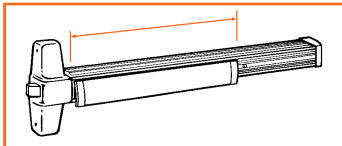


## Balanced Doors

- Panic hardware used on balanced doors must be touchpad style (not crossbar) and the touchpad must **NOT** extend more than half the width of the door.

USE THIS, NOT THAT



## Mounting Height

- 34" minimum AFF
- 48" maximum AFF

- Existing hardware may be installed in other locations per previous codes.

- Exception for pool doors/gates



*Photo: David Sochaczevski*

## Projections Into Clear Width (IBC)

- Projections into the clear opening width between 34" and 80" above the floor shall not exceed 4"
- No projections into the required clear opening width lower than 34" above the floor



4" Max.

No Proj.
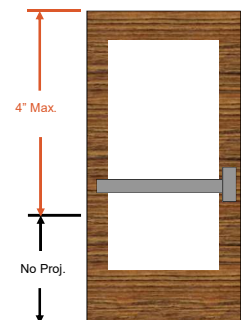
## Projections Into Clear Width (NFPA 101)

- NFPA 101 limits the 4" projections to 34"-48" above the floor, hinge side only, specifically to address panic hardware.

No Proj.

4" Max.

No Proj.
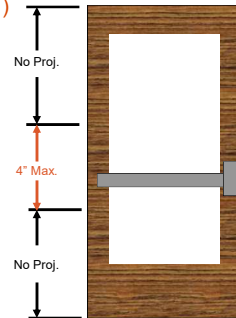
## Flush Bottom Rail
## Protruding Hardware

- Accessibility standards prohibit protruding hardware in the bottom 10 inches of door height
  - Push side
  - Manually-operated doors
- Surface vertical rods conflict with this requirement
- Extended rod guards may be allowed by the code official

## Operable Force

- ADA – 5 pounds maximum to release the latch
- A117.1-2017 & other codes – 15 pounds maximum to release the latch
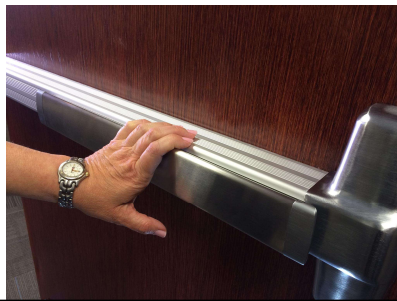
## Code Requirements for Electrified Options

- Access Control/Free Egress
  - Electrified Trim
  - Electric Latch Retraction
- Stairwell Reentry
- Delayed Egress
- Controlled Egress
- Electromagnetic Lock Release

## POLL
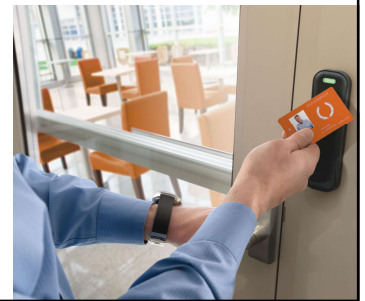
According to the IBC, which of these electrified hardware applications are NOT required to be listed to UL 294 – Standard for Access Control System Units?

A. **Access Control/Free Egress and Stairwell Reentry**
B. Delayed Egress and Controlled Egress
C. Electromagnetic Lock Applications
D. All access control systems must be listed to UL 294

## UL 294 – Standard for Safety
## Access Control System Units

- UL 294 listing is **NOT** required by code for all types of access control systems
- The listing **IS** required by code for:

| | |
|---|---|
| Delayed Egress Locks | **15 Second Delay** |
| Controlled Egress Locks | **Health Care Only** |
| Sensor Release | **Typically Electromagnetic Locks** |
| Door-Hardware Release | |
| Elevator Lobby Locks | **NFPA 101 Only** |

UL 294

STANDARD FOR SAFETY
Access Control System Units

### Access Control / Free Egress – Electrified Trim or Electric Latch Retraction



- Panic hardware allows free egress independent of access control system
- Reader only controls access
- Not considered a "special locking arrangement"
- UL 294 listing **NOT** required
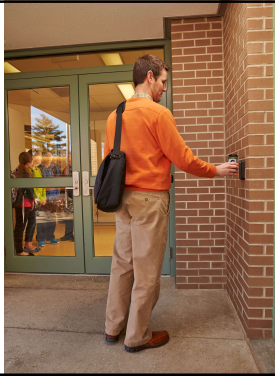
### Stairwell Reentry



- Allows building occupants to leave stairwell and reenter building through locked doors
- Fire exit hardware with fail safe electrified trim (or fail safe lockset or electromagnetic lock)
- Stair side lever unlocks:
  - upon fire alarm (NFPA 101), or
  - upon signal from fire command center or other location (IBC/IFC)
- UL 294 listing **NOT** required
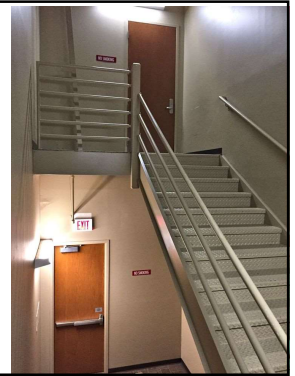
### Delayed Egress

- Delays egress for 15 seconds to prevent theft or elopement (30 seconds when approved by AHJ)
- Must allow immediate egress upon power failure and activation of fire alarm/sprinkler system
- Not allowed in all occupancy types
- UL 294 listing **IS** required



### Controlled Egress in Health Care

- Allowed where patients require containment for safety or security
- Egress is prevented until evacuation is needed
- Staff must be able to evacuate patients
- Typically used in memory care units, maternity/nursery, pediatrics – or where approved by the AHJ
- UL 294 listing **IS** required



### Electromagnetic Lock Release

- 2 ways to release – sensor above door or switch in door-mounted hardware
- RX switch in panic hardware:
  - Lock must unlock upon loss of power
  - Fire alarm release and auxiliary push button not required by the model codes
- UL 294 listing **IS** required
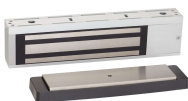


### Conclusion



- What is panic hardware?
- Why is it used?
- Where is it required?
- What code requirements must be followed?
- How do electrified options affect panic hardware?

## Thank You!
This concludes the American Institute of Architects
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## Webinars

### Webinar 2: Panic Hardware – When, Where, and Why?

**Thursday April 16th, 2020**

The model codes require panic hardware for locations that are subject to emergency egress for a high occupant load, and also for rooms housing certain types of electrical equipment. When panic hardware is required, there are additional mandates that must be followed regarding the operation of the hardware. The door could not swing in away of

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